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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602.638	06/25/2003	Dong-seog Han	1349.1217	1052
21171	7590	09/21/2006	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			JOSEPH. JAISON	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/602,638	<b>Applicant(s)</b> HAN ET AL.	
	<b>Examiner</b> Jaison Joseph	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 17 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is not understood how one of ordinary skilled in the art would enable the invention as cited in claim 17. Claim 17 recite the limitations "estimating the channel estimation value comprises; adding the first signal and the second signal". However current specification discloses channel estimation is estimated by correlating input signal with field synchronizing signal. Current specification does not disclose estimating channel estimation by adding a first signal and a second signal. Clarification required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Omura et al, (US Patent 6,559,894).

Regarding claim 1, AAPA disclosed in Figure 2, a linear equalizer for a single carrier receiver comprising a filter unit initializing coefficients of filters and filtering a pre-ghost of the received signal and an error calculation unit calculating an equalization error using an output signal from said filter unit (see paragraph 6 – 9). AAPA does not disclose a channel estimation unit estimating channel estimation values using a received signal inputted thereto and a generated field-synchronizing signal and using the channel estimation to initialize the filter coefficients. However in analogous art, Omura et al teach a channel estimation unit estimating channel estimation values using a received signal inputted thereto and a generated field-synchronizing signal and using the channel estimation to initialize the filter coefficients (see figure 5, components 502, 512, 514 and column 7, lines 6 – 59). Therefore it would be obvious to an ordinary skilled in the art at the time the invention was made to incorporate the teachings of using channel estimation to initialize the equalizer in AAPA. The motivation or suggestion to do so is the equalizer will be more stable and can recover quickly after loss of synchronization (see column 3, lines 20 – 28).

Regarding claim 2, which inherits the limitations of claim 1, AAPA further teach said filter unit updates the coefficients of the filters according to the equalization error and filters the pre-ghost and post-ghost using the updated coefficients of the filters (see paragraph 4).

Regarding claim 3, which inherits the limitations of claim 1, Omura et al further teach said channel estimation unit includes a correlation cumulation unit calculating an cumulating correlation values between the received signal and the field synchronizing signal; and an estimation decision unit deciding the channel estimation values by applying a predetermined threshold value to the cumulated correlation values (see figure 6, and column 7, lines 17 – 32).

Regarding claim 4, which inherits the limitations of claim 1, AAPA further teach a decision unit deciding a signal level for an output signal from said filter unit, wherein said error calculation unit calculates the equalization error using an input signal to said decision unit and an output signal from said decision unit (see paragraph 7).

Regarding claim 5, which inherits the limitations of claim 1, AAPA further teach error calculation unit calculates the equalization error using the output signal from said decision unit and the field-synchronizing signal (see paragraph 8).

Regarding claim 6, the claimed method including the features corresponds to the subject matter mentioned above in the rejection of claim 1 is applicable hereto.

Regarding claim 7, which inherits the limitations of claim 6, the claimed method including the features corresponds to the subject matter mentioned above in the rejection of claim 3 is applicable hereto.

Regarding claim 8, AAPA teach a decision feedback equalizer comprising a feed forward unit (figure 3, component 342) initializing coefficients of a first filter and filtering a pre-ghost of the received signal, a feedback unit (figure 3, element 43) initializing coefficients of a second filter and filtering a post-ghost of the received signal; and an error calculation unit (figure 3, component 47) calculating an equalization error using output signals from said FF and FB units. AAPA does not disclose a channel estimation unit estimating channel estimation values using a received signal inputted thereto and a generated field-synchronizing signal and using the channel estimation to initialize the filter coefficients. However in analogous art, Omura et al teach a channel estimation unit estimating channel estimation values using a received signal inputted thereto and a generated field-synchronizing signal and using the channel estimation to initialize the filter coefficients (see figure 5, components 502, 512, 514 and column 7, lines 6 –59). Therefore it would be obvious to an ordinary skilled in the art at the time the invention was made to incorporate the teachings of using channel estimation to initialize the equalizer in AAPA. The motivation or suggestion to do so is the equalizer will be more stable and can recover quickly after loss of synchronization (see column 3, lines 20 – 28).

Regarding claim 9, which inherits the limitations of claim 9, AAPA further teach said FF and FB units updates the coefficients of first and second filters, respectively according to the equalization error and filters the pre-ghost and post-ghost using the updated coefficients of the first and second filters (see paragraph 10).

Regarding claim 10, which inherits the limitations of claim 8, Omura et al further teach said channel estimation unit includes a correlation cumulation unit calculating an cumulating correlation values between the received signal and the field synchronizing signal; and an estimation decision unit deciding the channel estimation values by applying a predetermined threshold value to the cumulated correlation values (see figure 6, and column 7, lines 17 – 32).

Regarding claim 11, which inherits the limitations of claim 8, AAPA further teach an adder (see figure 3, adder 44) for adding the output signals from said FF and FB units to output a resulting signal (the output signal from the adder); a decision unit (see figure 3, component 46) deciding a signal level for an output signal from said adder and inputting the resulting signal of the predetermined level of said FB unit, wherein said error calculation unit calculates the equalization error using an input signal to said decision unit and an output signal of the predetermined level from said decision unit (see paragraph 10).

Regarding claim 12, which inherits the limitations of claim 11, AAPA further teach error calculation unit calculates the equalization error using the output signal from said adder and the field-synchronizing signal 9see paragraph 12).

Regarding claim 13, the claimed method including the features corresponds to the subject matter mentioned above in the rejection of claim 8 is applicable hereto.

Regarding claim 14, which inherits the limitations of claim 13, the claimed method including the features corresponds to the subject matter mentioned above in the rejection of claim 10 is applicable hereto.

Regarding claim 15, the claimed method including the features corresponds to the subject matter mentioned above in the rejection of claim 1 is applicable hereto.

Regarding claim 16, which inherits the limitations of claim 15, the claimed method including the features corresponds to the subject matter mentioned above in the rejection of claim 1 is applicable hereto.

Regarding claim 18, which inherits the limitations of claim 15, AAPA further teach determining if a blind mode is selected; outputting a predetermined signal from a decision unit if the blind mode is selected; and selecting the received signal as the first signal and the predetermined signal as the second signal when the blind mode is selected (see paragraph 11).

Regarding claim 19, which inherits the limitations of claim 15, AAPA further teach determining if a training mode is selected and selecting a field synchronizing signal as the first signal and an output signal from a filter having the updated filter coefficients as the second signal when the training mode is selected (see paragraph 12).

Regarding claim 20, the claimed method including the features corresponds to the subject matter mentioned above in the rejection of claim 1 is applicable hereto.

Regarding claim 21, which inherits the limitations of claim 20, the claimed method including the features corresponds to the subject matter mentioned above in the rejection of claim 1 is applicable hereto.

Regarding claim 22, which inherits the limitations of claim 20, AAPA further teach updating the filter coefficients with the equalization error (see paragraph 10).



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Regarding claim 23, which inherits the limitations of claim 20, AAPA further teach the filter coefficients having a finite impulse response (see paragraph 10).

Regarding claim 24, which inherits the limitations of claim 20, AAPA further teach the filter coefficients having an infinite impulse response (see paragraph 10).

### ***Conclusion***

Al-Dhahir et al disclose in US Patent 6,122,015 Method and apparatus for filtering digital television signals.

Roy et al disclose in US Patent 5,341,177 System to cancel Ghosts generated by multipath transmission of television signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaison Joseph whose telephone number is (571) 272-6041. The examiner can normally be reached on M-F 9:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jaison Joseph  
09/15/2006



CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER